

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (amended) A digital signal processing method for converting a digital audio signal, comprising:
 - ~~the frequency analysis step of calculating power spectrum data from said digital~~
audio signal;
 - ~~the spectrum data extracting step of extracting a part of power spectrum data from~~
said power spectrum data;
 - ~~the classification step of classifying said digital audio signal based on said part of~~
power spectrum data; and
 - ~~the predictive operation step of generating a new digital audio signal formed by~~
converting said digital audio signal by using a predicting method corresponding to said ~~classified~~
class classifying step.
2. (amended) The digital signal processing method according to claim 1, wherein:
 - in said ~~frequency analysis~~ calculating step, various operation processing methods
of window function are provided; and
 - a desired operation processing method is used according to the a frequency
characteristic of said digital audio signal.

3. (amended) The digital signal processing method according to claim 1, wherein;
in said ~~spectrum data~~-extracting step, power spectrum data having DC component
is excepted when said part of power spectrum data is extracted.

4. (amended) The digital signal processing method according to claim 1, wherein;
in said ~~predictive operation~~ generating step, a predictive coefficient that has been
previously generated by learning based on a desired digital audio signal is used.

5. (amended) The digital signal processing method according to claim 1, wherein:
said power spectrum data is formed by almost symmetric components; and
in said ~~spectrum data~~-extracting step, either right or left of the components is an
object to be extracted, in said power spectrum data.

6. (amended) A digital signal processing apparatus for converting a digital audio signal,
comprising:

frequency analysis means for calculating power spectrum data from said digital
audio signal;

spectrum data extracting means for extracting a part of power spectrum data from
said power spectrum data;

classification means for classifying said digital audio signal based on said part of
power spectrum data; and

predictive operation means for generating a new digital audio signal ~~formed by~~
converting said digital audio signal ~~by using~~ a predicting method corresponding to said ~~classified~~
class classification means.

7. (amended) The digital signal processing apparatus according to claim 6, wherein:

said frequency analysis means provides various operation processing means of
window function; and

desired operation processing means is used according to ~~the~~ a frequency
characteristic of said digital audio signal.

8. (original) The digital signal processing apparatus according to claim 6, wherein;

said spectrum data extracting means excepts power spectrum data having DC
component when said part of power spectrum data is extracted.

9. (original) The digital signal processing apparatus according to claim 6, wherein;

said predictive operation means uses a predictive coefficient that has previously
generated by learning based on desired digital audio signal.

10. (original) The digital signal processing apparatus according to claim 6, wherein:

said power spectrum data is formed by almost symmetric components; and

said spectrum data extracting means extracts either right or left of the components in said power spectrum data.

11. (amended) A program storage medium for making a digital signal processing apparatus execute a program, comprising:

~~the frequency analysis step of calculating power spectrum data from a digital~~
audio signal;

~~the spectrum data extracting step of extracting a part of power spectrum data from~~
said power spectrum data;

~~the classification step of classifying said digital audio signal based on said part of~~
power spectrum data; and

~~the prediction operation step of generating a new digital audio signal formed by~~
converting said digital audio signal by using a predicting method corresponding to said ~~classified~~
class classifying.

12. (amended) The program storage medium according to claim 11, wherein:

in said ~~frequency analysis step~~calculating, various operation processing methods of window function are provided; and

a desired operation processing method is used according to a ~~the~~ frequency characteristic of said digital audio signal.

13. (amended) The program storage medium according to claim 11, wherein;

in said ~~spectrum data~~-extracting step, power spectrum data having DC component is excepted when said part of power spectrum data is extracted.

14. (amended) The program storage medium according to claim 11, wherein:

said power spectrum data is formed by almost symmetric components; and

in said ~~spectrum data~~ extracting step, either right or left of the components is an object to be extracted, in said power spectrum data.

15. (amended) A learning method for generating a predictive coefficient to be used in a digital signal processing device for converting a digital audio signal, in prediction of said conversion processing, comprising:

~~the learner digital audio signal generating step of generating a learner digital audio signal that desired digital audio signal has deteriorated~~ by deteriorating a desired digital audio signal;

~~the frequency analysis step of calculating power spectrum data from said learner digital audio signal;~~

~~the spectrum data extracting step of extracting a part of power spectrum data from said power spectrum data;~~

~~the classification step of classifying said digital audio signal based on said part of power spectrum data; and~~

~~the predictive coefficient calculating step of calculating a predictive coefficient~~
corresponding to said ~~class~~ classifying step based on said desired digital audio signal and said learner digital audio signal.

16. (amended) The learning method according to claim 15, wherein:

in said ~~frequency analysis~~ calculating step, various operation processing methods of window function are provided; and

a desired operation processing method is used according to ~~the~~ a frequency characteristic of said digital audio signal.

17. (amended) The learning method according to claim 15, wherein;

in said ~~spectrum data~~ extracting step, power spectrum data having DC component is excepted when said part of power spectrum data is extracted.

18. (amended) The learning method according to claim 15, wherein: said power spectrum data is formed by almost symmetric components; and

in said ~~spectrum data~~ extracting step, either right or left of the components is an object to be extracted, in said power spectrum data.

19. (amended) A learning device for generating a predictive coefficient to be used in a digital signal processing apparatus for converting a digital audio signal, in predictive operation of said conversion processing, comprising:

learner digital audio signal generating means for generating a learner digital audio signal ~~that desired digital audio signal has deteriorated~~ by deteriorating a desired digital audio signal;

frequency analysis means for calculating power spectrum data from said learner digital audio signal;

spectrum data extracting means for extracting a part of power spectrum data from said power spectrum data;

classification means for classifying said digital audio signal based on said part of power spectrum data; and

predictive coefficient calculating means for calculating a predictive coefficient corresponding to said ~~class~~ classification means based on said desired digital audio signal and said learner digital audio signal.

20. (amended) The learning device according to claim 19, wherein:

said frequency analysis means provides various operation processing means of window function; and

desired operation processing means is used according to ~~the~~ a frequency characteristic of said digital audio signal.

21. (original) The learning device according to claim 19, wherein;

said spectrum data extracting means excepts power spectrum data having DC component when said part of power spectrum data is extracted.

22. (original) The learning device according to claim 19, wherein: said power spectrum data is formed by almost symmetric components; and

said spectrum data extracting means extracts either right or left of the components in said power spectrum data.

23. (amended) A program storage medium for making a digital signal processing apparatus execute a program comprising:

~~the learner digital audio signal generating step of generating a learner digital audio signal that desired digital audio signal has deteriorated~~ by deteriorating a desired digital audio signal;

~~the frequency analysis step of calculating power spectrum data from said learner digital audio signal;~~

~~the spectrum data extracting step of extracting a part of power spectrum data from said power spectrum data;~~

~~the classification step of classifying said digital audio signal based on said part of power spectrum data; and~~

~~the predictive coefficient calculating step of calculating a predictive coefficient~~
corresponding to said ~~class~~ classifying step based on said desired digital audio signal and said
learner digital audio signal.

24. (amended) The program storage medium according to claim 23, wherein:

in said ~~frequency analysis calculating step~~, various operation processing methods
of window function are provided; and

a desired operation processing method is used according to ~~the~~ a frequency
characteristic of said digital audio signal.

25. (amended) The program storage medium according to claim 23, wherein:

in said ~~spectrum data extracting step~~, power spectrum data having DC component
is excepted when said part of power spectrum data is extracted.

26. (amended) The program storage medium according to claim 23, wherein:

said power spectrum data is formed by almost symmetric components; and

in said ~~spectrum data extracting step~~, either right or left of the components is an
object to be extracted, in said power spectrum data.